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Salt Lake County Solar Power Financing Options

Presentation to Salt Lake County
Friday, October 3, 2008





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NOTICE

The purpose of this report is to provide an evaluation of various possible financing and structuring options for installing solar power systems on Salt Lake County property. This report does not represent a conclusion on the part of Ballard Spahr Andrews & Ingersoll LLP, Zions Bank, or Energy Investors Advisors (EIA) that any particular option is permissible or feasible in any specific instance. Such a conclusion would only be reached, if at all, following an evaluation of detailed site-specific and transaction-specific information. To determine whether a particular financing or structuring option is feasible for a specific project, an in-depth evaluation of the proposed project should be conducted.

Ballard Spahr Andrews & Ingersoll is engaged in the practice of law. Neither Zions Bank nor EIA have rendered any legal advice in providing their contributions to this report.

Project Background

- Salt Lake County RFP (deadline May 1, 2008) sought assistance evaluating financing options available for installing solar projects on County Property
- Ballard Spahr, Zions Bank and EIA were selected to provide consulting services
- Using inputs provided by engineering and tax consultants already engaged by the County, comparative costs of solar projects using various financing models are presented here
- Regulatory and legislative considerations may need to be addressed as follow-up action

Outline of Discussion

- 1. Trends in Solar Power**
- 2. Description of Financial Model**
- 3. Costs of Each Financing Option**
- 4. Structure of Each Financing Option**
- 5. Conclusion & Recommendations**

“I should know, but remind me what a kilowatt is.”

- The **kilowatt** (symbol: **kW**) is equal to one thousand watts. A kilowatt is approximately equivalent to 1.34 horsepower. An electric heater with one heating-element might use 1 kilowatt.
- A **kilowatt hour** (symbol: **kW/hr**) is the use of one kilowatt of electricity for one hour.
- The **megawatt** (symbol: **MW**) is equal to one thousand kilowatts (one million watts).
- **Insolation** (Incoming Solar Radiation) is the amount of solar radiation on the earth's surface, sometimes expressed as kilowatt hours per year per installation or watts/meter². Average insolation in clear daylight is about 1,000 watts/m².
- **Photovoltaic (PV)** pertaining to the direct conversion of light into electricity.

Who's Doing Large-Scale Solar Electric?

- Over 150 MW of **solar PV** was installed at 25,000 locations in the U.S. in 2007*.
- **Kohl's Department Stores** has converted 43 locations to solar power and will add another 85 sites (out of 1,004 stores in 48 states). Capacity on California stores may total 25 MW of installed power.
- **Macy's**, which has solar panels on 18 stores, will install them on 40 more by the end of 2008.
- **Safeway** plans a pilot project to put panels on 23 stores.
- **Wal-Mart** has installed solar panels on 17 stores or distribution centers as part of a pilot project.



Solar panels installed on a Kohls Department store.

**U.S. Solar Market Trends 2007, August 2008, IREC.
This figure includes an 8.3 MW system installed in
Alamosa, Colorado.*

Solar PV Applications

Residential Retrofit



New Production Homes



Commercial & Public



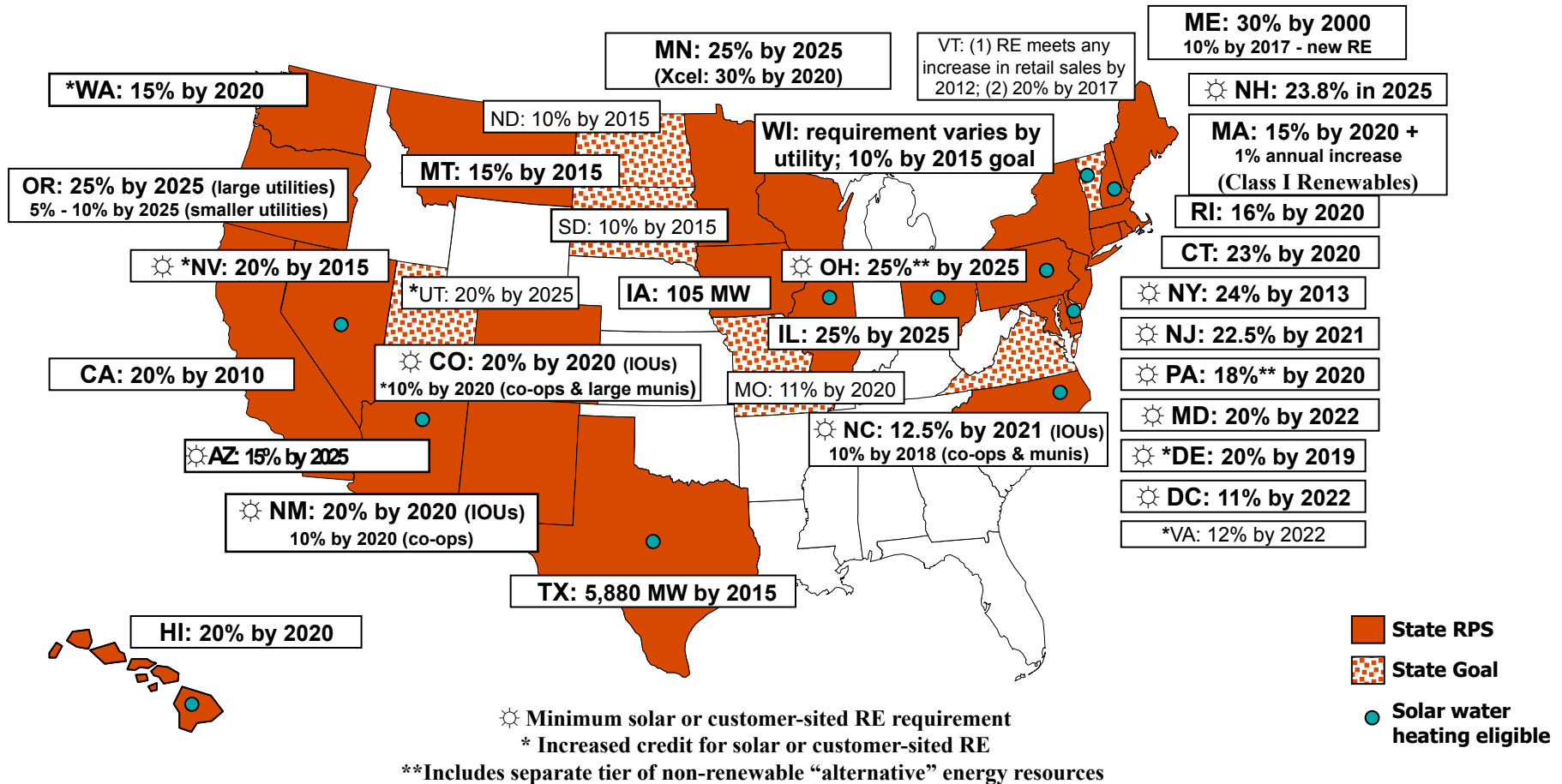
Power Plants



Governmental Incentives

- State Renewable Portfolio Standards (in 28+ states as of 8/08)
 - RPS require utilities to purchase a fixed percentage of their electricity from renewables
 - Many states allow for trading of Renewable Energy Credits (RECs)
- Other state incentives
 - Rebates
 - Production and investment tax credits
 - Sales tax and property tax exemptions
- Federal tax provisions
 - Accelerated depreciation – 5 years
 - Investment tax credit – 30% of value placed in service in taxable year (recently extended through 2016)

Renewable Portfolio Standards



DSIRE: www.dsireusa.org

August 2008

Electricity Consumption/Costs

Average Residential Electricity Costs by State

State	Cost / kWh	Monthly Consumption
Arizona	9.4 cents	1,104 kWh
California	14.3 cents	590 kWh
Colorado	9.0 cents	696 kWh
Nevada	11.1 cents	977 kWh
New Jersey	13.4 cents	698 kWh
Utah	7.6 cents	774 kWh
U.S. Average	10.4 cents	920 kWh

Source: U.S. Department of Energy, 2006 Data

Overview of Solar Power Entity Structures

1. **CREBs financing** – public ownership
2. **Tax-exempt financing** – public ownership
3. **Private Ownership** - Investment Tax Credit and Accelerated Depreciation with Market Rate Debt
 - (a) Partnership Flip (County – PPA)
 - (b) Sale/Leaseback (County – PPA)
4. **New Markets Tax Credit** – without Federal energy investment tax credit (County – PPA until ownership transfer)
5. **New Markets Tax Credit** – with Federal energy investment tax credit (County – PPA)

Description of Financial Model

Goal: calculate levelized cost per kWh of energy under each financing option.

Basic Assumptions:

- Same installed system cost for each option
- Same system output for each option
- Finance costs vary depending on option used
- Varying proportions of debt and equity investment for each model
- Same power cost savings are assumed for each option
- Same value of Carbon Credits and RECs for each model
- Site data and installation costs are estimated and will require site-specific refinement

Description of Financial Model

Formula: Net Cost of Power

$$\frac{((\text{total system cost} * \text{cost of money}) + \text{operating costs of solar project} - \text{power cost savings} - \text{credits generated})}{\text{total power output}} = \text{net cost/kWh}$$

Items in model:

- Installed System Cost (input from County consultant)
- **Add**
 - Operations & maintenance costs
 - Property taxes for privately owned systems
 - Annual CDE audit fees for New Markets Tax Credits
- **Subtract**
 - Total power cost energy savings
 - Value of RECs / Carbon Credits
 - Tax benefits (New Markets, Federal Investment Tax Credit, State Investment Tax Credit)

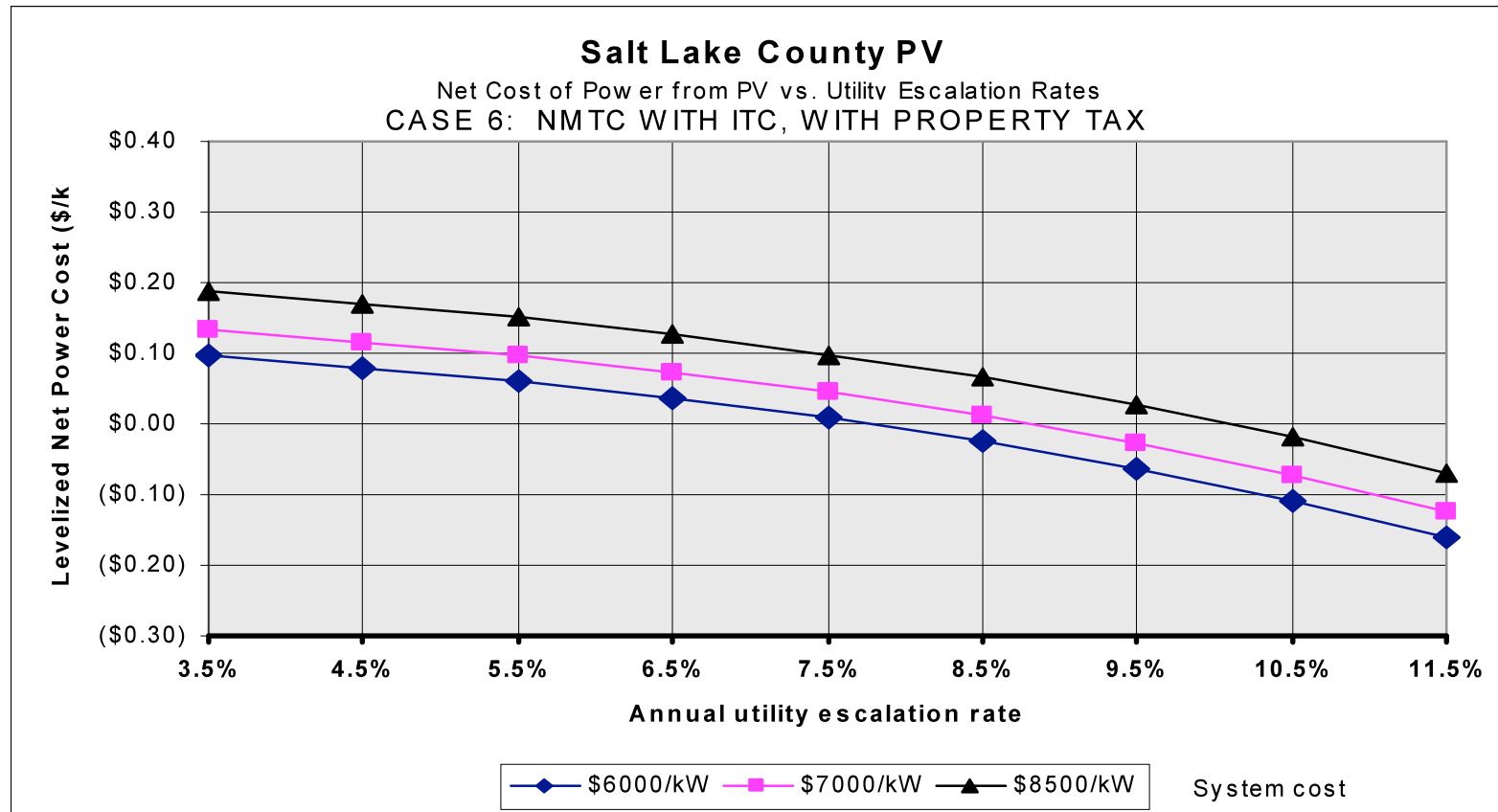
Levelized Net Costs* of Each Financing Option - Solar PV

Financing Options	Construction Cost per watt installed		
	Base Case** (\$8.50 / watt)	Lower-cost \$7.00 / watt	Lowest-cost \$6.00 / watt
CREBs	\$0.29 / kWh	\$0.22 / kWh	\$0.17 / kWh
Tax-exempt financing	\$0.38	\$0.29	\$0.23
Private owner with ITC	\$0.23	\$0.17	\$0.13
NMTC – no ITC (3.75% debt)	\$0.29	\$0.22	\$0.17
NMTC – with ITC	\$0.19	\$0.13	\$0.10

*These costs represent the additional levelized net costs of power per kilowatt-hour over the expected life of the system (above current electricity costs), incorporating the value of future carbon credits, costs of personal property taxes, the value of solar RECs (a value of zero is assumed for Utah solar RECs because Utah currently has no mandatory RECs market), a 10% state renewable corporate tax credit capped at \$50,000, and power cost savings, assuming that utility rates increase at 3.5% per year.

**At a cost of \$8.50 per installed watt, installing a 1 MW system would cost roughly \$8.5 million.

Impact of Utility Rate Increase on System Cost



Note: Due to cost savings, the costs or benefits of each project is sensitive to utility rate increases.

Impact of Property Tax Exemption

- Property tax payments are significant for privately owned solar projects, especially in the early years of the project.
- This chart reflects the additional levelized net costs of power per kilowatt-hour over the expected life of the system if no property taxes on the solar property are assessed, holding all other variables constant.
- Legislative action would be required for such a property tax exemption.

Financing Options	Base Case (\$8.50 / watt)	Without Property Tax (\$8.50 / watt)	Lower-cost (\$7.00 / watt)	Without Property Tax (\$7.00 / watt)
Private with ITC	\$0.23 / kWh	\$0.21 / kWh	\$0.17 / kWh	\$0.15 / kWh
NMTC – with ITC	\$0.19	\$0.16	\$0.13	\$0.11

Impact of \$0.10/kWh Solar REC Value - Solar PV

Financing Options	Base Case (\$8.50 / watt)	With \$0.10 / kWh Solar REC (\$8.50 / watt)	Lower-cost (\$7.00 / watt)	With \$0.10 / kWh Solar REC (\$7.00 / watt)
CREBs	\$0.29 / kWh	\$0.20 / kWh	\$0.22 / kWh	\$0.13 / kWh
Tax-exempt financing	\$0.38	\$0.29	\$0.29	\$0.21
Private owner with ITC	\$0.23	\$0.15	\$0.17	\$0.08
NMTC – no ITC (3.75% debt)	\$0.29	\$0.20	\$0.22	\$0.13
NMTC – with ITC	\$0.19	\$0.10	\$0.13	\$0.05

These costs represent the additional levelized net costs of power per kilowatt-hour over the expected life of the system (above current electricity costs), incorporating no value for future carbon credits and solar REC prices of \$0.10/kWh, personal property taxes, a 10% state renewable corporate tax credit capped at \$50,000, and power cost savings, assuming that utility rates increase at 3.5% per year.

Impact of Increased Renewable Corporate Tax Credit - Solar PV

Impact on Levelized Power Costs of increase in state renewable corporate tax credit to 20% with no cap, other factors held constant

Financing Options	Base Case (\$8.50 / watt)	With Increased State Tax Credit (\$8.50 / watt)	Lower-cost (\$7.00 / watt)	With Increased State Tax Credit (\$7.00 / watt)
Private owner with ITC	\$0.23 / kWh	\$0.13	\$0.17 / kWh	\$0.08
NMTC – with ITC	\$0.19	\$0.10	\$0.13	\$0.07

These costs represent the additional levelized net costs of power per kilowatt-hour over the expected life of the system (above current electricity costs), incorporating the value of future carbon credits, personal property tax, carbon credits, solar RECs (a value of zero is assumed for Utah solar RECs because Utah currently has no mandatory RECs market), a 20% state renewable corporate tax credit with no cap, and power cost savings, assuming that utility rates increase at 3.5% per year.

Impact of Favorable Policy Modifications - Solar PV

Impact on Levelized Power Costs of no personal property tax,
\$0.10 / kWh solar REC value, and state renewable corporate tax
credit of 20% with no cap

Financing Options	Base Case (\$8.50 / watt)	With Favorable Policy Modifications (\$8.50 / watt)	Lower-cost (\$7.00 / watt)	With Favorable Policy Modifications (\$7.00 / watt)
Private owner with ITC	\$0.23 / kWh	\$0.02 / kWh	\$0.17 / kWh	(\$0.02) / kWh [Savings of \$0.02/ kWh]
NMTC – with ITC	\$0.19	(\$0.01) [Savings of \$0.01/ kWh]	\$0.13	(\$0.04) [Savings of \$0.04/ kWh]

These costs represent the additional levelized net costs of power per kilowatt-hour over the expected life of the system (above current electricity costs), incorporating no value for future carbon credits and solar REC prices of \$0.10/kWh, no personal property taxes, a 20% state renewable corporate tax credit with no cap, and power cost savings, assuming that utility rates increase at 3.5% per year.

Levelized Net Costs for Solar Hot Water Systems

- **Because of lower natural gas usage and low installed cost, on a levelized basis, solar hot water systems for swimming pools are estimated to save the County money each year.**
- **Third-party financing was not considered for solar heating for swimming pools because it does not qualify for the federal energy investment tax credit, and the market for third-party financing is not as well-established as it is for solar PV.**



Financing - Levelized Net Costs for Solar Hot Water

Solar Hot Water Systems Save the County Money each Year

Tax-Exempt Financing (County ownership)	Assumptions of Annual Natural Gas Price Increases over project life		
	0% Price Increase / yr	2% Price Increase / yr	5% Price Increase / yr
Costs / (Savings) per MMBtu	(\$4.51) / MMBtu	(\$6.49) / MMBtu	(\$10.48) / MMBtu
Annual Savings per System	\$4,243 / yr Annual Savings	\$6,068 / yr Annual Savings	\$9,742 / yr Annual Savings

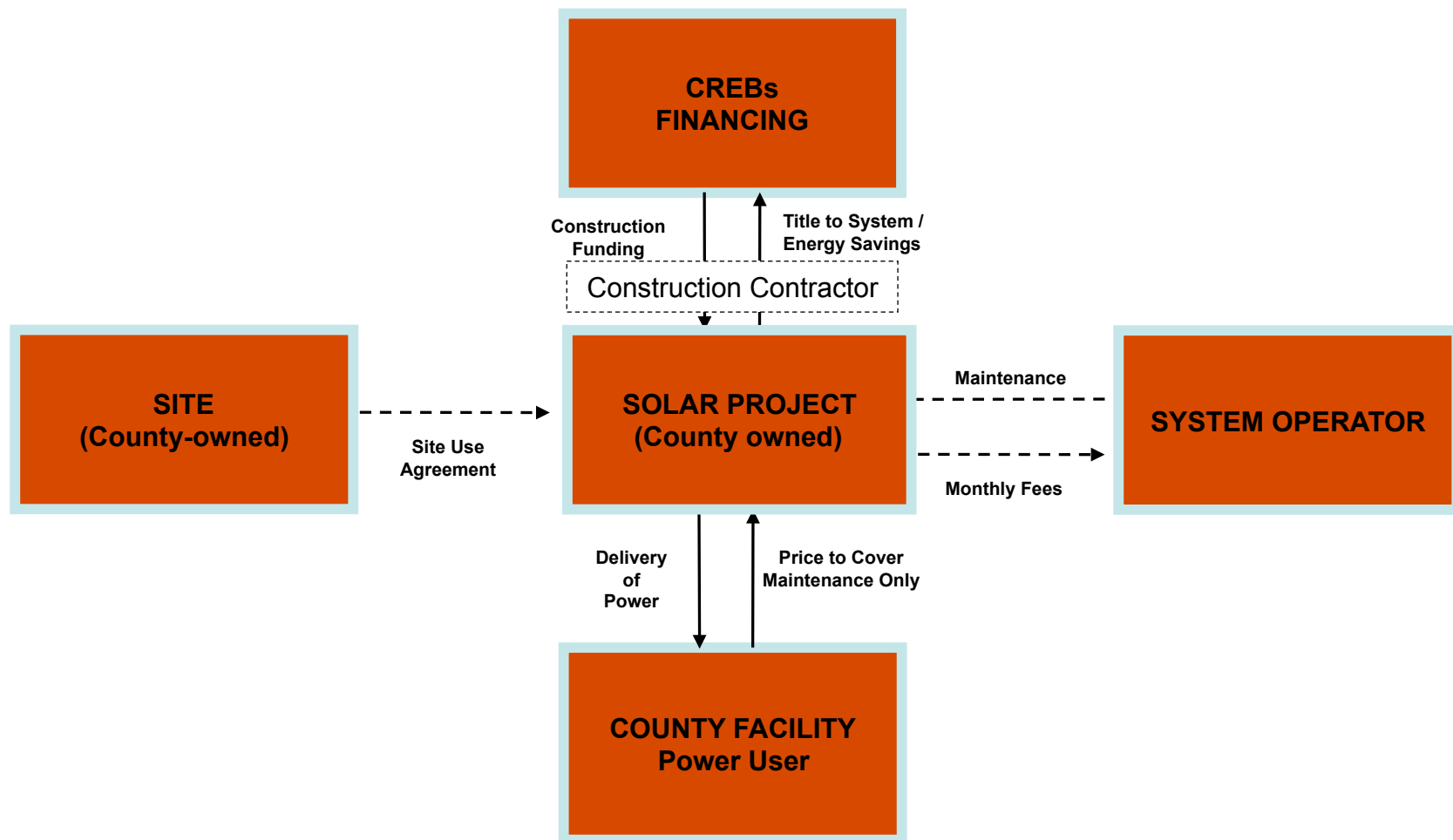
The estimates in this table assume \$60/MMBtu/yr in installed system costs to provide hot water for a County outdoor swimming pool. The model includes overhead, debt costs and maintenance costs on the system and incorporates resulting lower levels of natural gas purchases and the value of carbon offsets.

Structure of Each Financing Option

Parties possibly involved in projects

- **County** as landlord, power purchaser and possible owner
- **System Operator** (County, project developer)
- **System Owner** (County, private party)
- **Project Developer** (County, private party)
- **Tax investor** (Banks)
- **Lender** (County, Commercial Lender)

Basic “Direct” Financing Structure: CREBs



Comments on CREBs Structure

Parties

- County (Landlord, Power User, Developer)
- CREBs lender
- Construction Contractor
- Operator

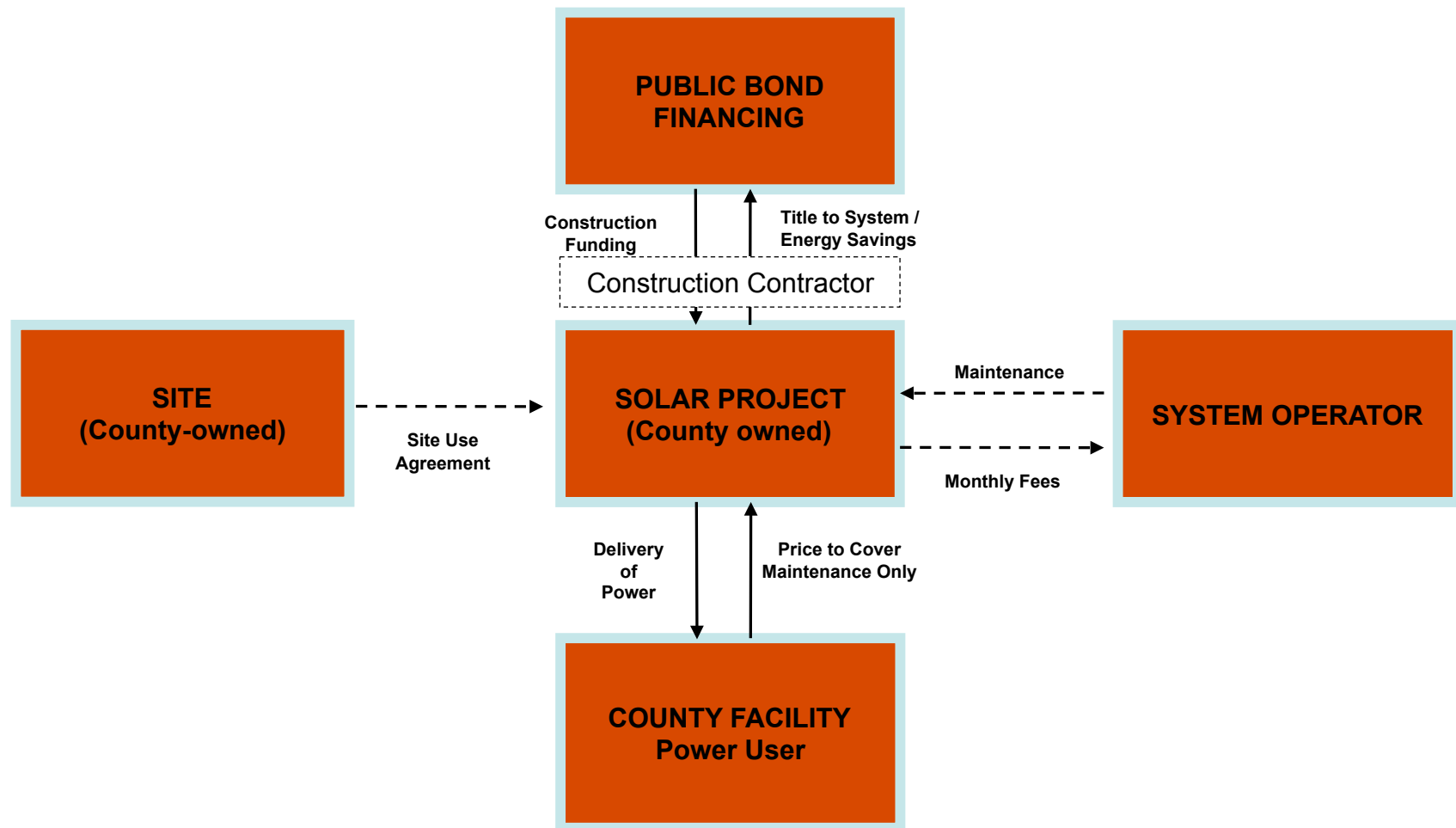
Risks

- Borrowing rate / repayment terms (level principal, short repayment terms)
- Thin Market
- System performance / Project completion risk

Potential Upsides

- Very low interest rate
- County ownership
- Future value of RECs / Carbon Credits

Basic “Direct” Financing Structure: Tax-exempt Bond



Comments on Tax-exempt Bond Structure

Parties

- County (Landlord, Power User, Developer)
- Public Finance Bank
- Construction Contractor
- Operator

Risks

- Borrowing rate / terms – total costs of borrowing
- Performance Risk
- Problems signing leases?

Potential Upsides

- County ownership for life of project
- Future value of RECs / Carbon Credits
- Familiarity with transaction process

Private Ownership – Need to Monetize Tax Benefits

- To take advantage of the value of the investment tax credit for renewable energy property and the accelerated depreciation benefits, the owner of the solar project must be a taxpayer.
- Project developers generally have low levels of net income during the first few years of the project's life, when the tax benefits are usable.
- To fully monetize the tax benefits, project developers receive equity investments from a tax investor.

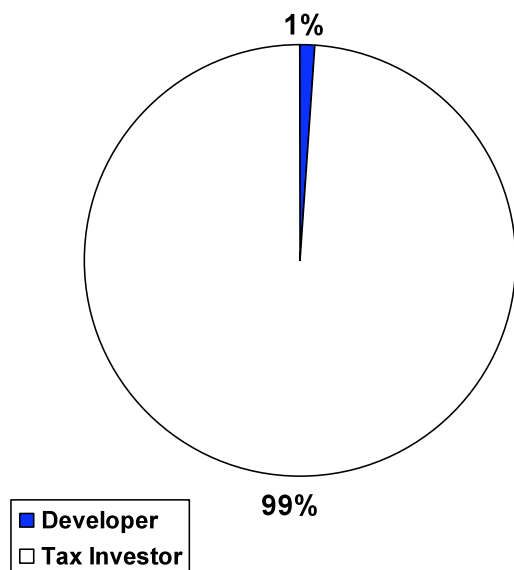
Private Ownership – Tax Structures

- Tax investors generally become involved in a project either:
 - As a limited partner in a “partnership-flip” structure that allows the tax investor to exit the project shortly after the tax benefits have been fully used,
 - or as an owner/lessor in a sale-leaseback structure, in which the tax investor purchases 100% of the project from the developer, who leases the system from the owner/lessor and sells power to the power purchaser. The developer/lessee is also generally the system operator.
- Regardless of which model is used, the aggregate tax benefits are essentially the same. The possible structures are included for reference.

Private Project Structure – Partnership Flip

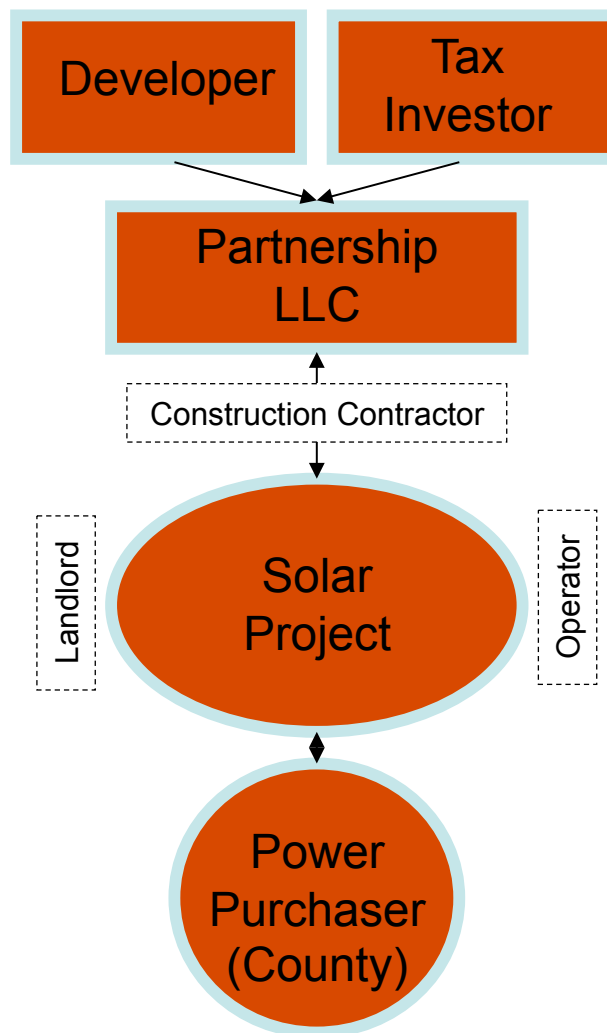
Phase 1: Pre-“Flip”

Cash and Tax Benefits



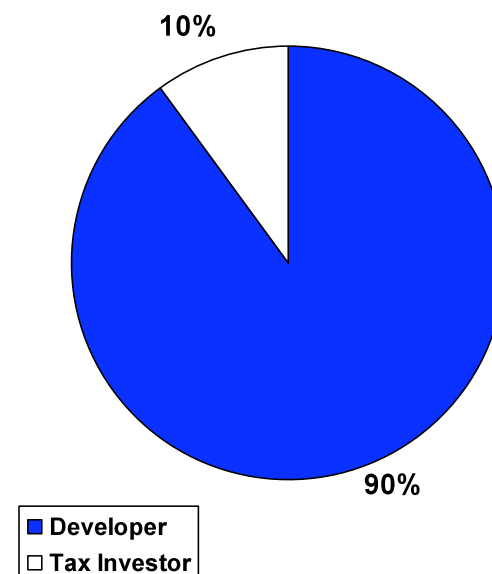
- Tax investor receives benefits in exchange for equity investment
- Key issue - tax appetite
- Tax benefits reduced for subsidized financing

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Phase 2: Post-“Flip”

Cash and Tax Benefits



- Flip is based on target ROI
- ITC vests over 5-year period
- MACRS benefits used over 5-year period

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Annuities

Comments on Private Partnership-Flip Structure

Parties

- County (Landlord, Power Purchaser)
- Developer
- Tax Investor
- Construction Contractor
- Operator

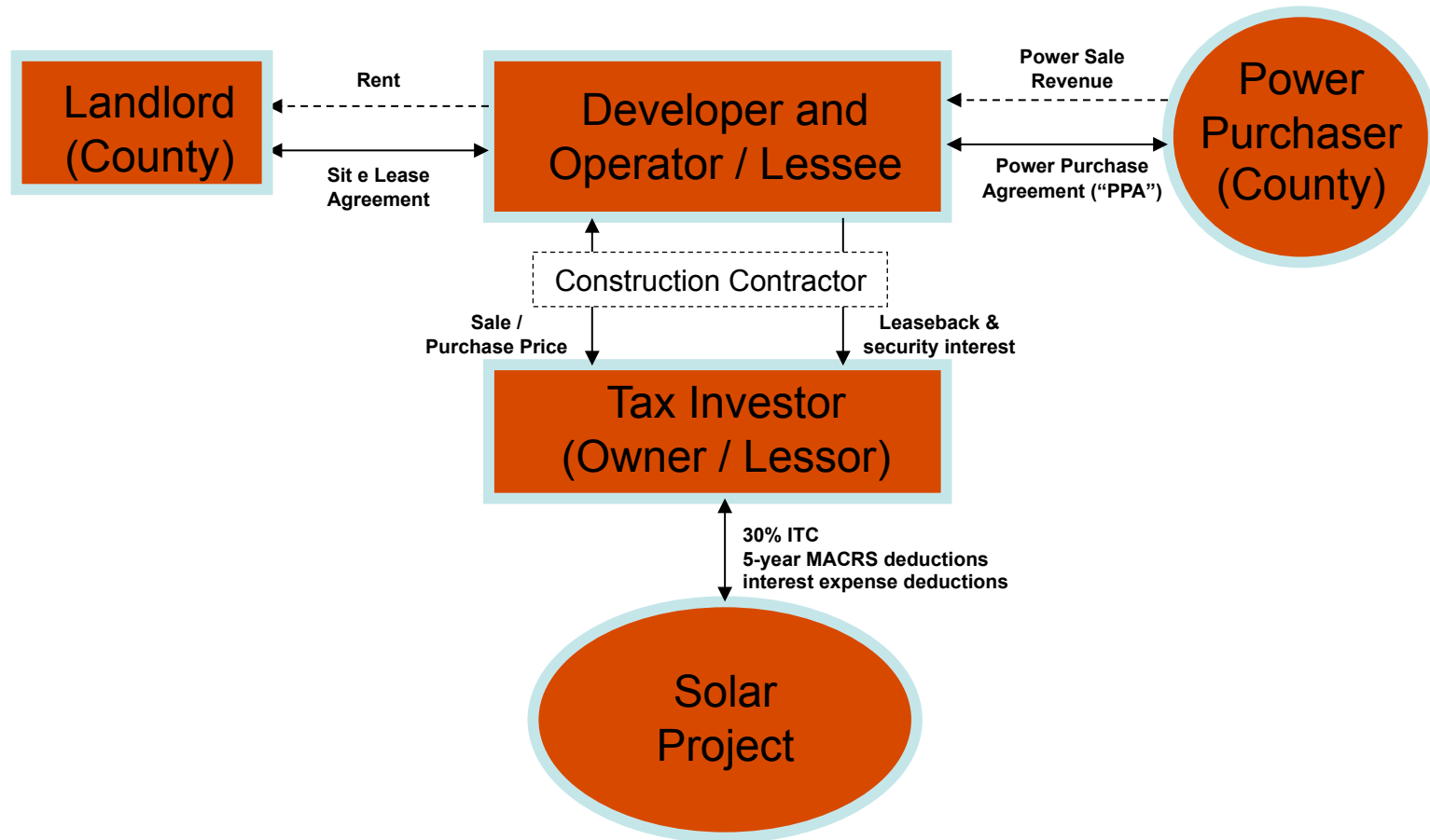
Risks

- Terms of PPA – price, term, purchase option price
- Environmental attributes stay with system owner

Potential Upsides

- No up-front capital required
- Predictable power price
- Utility savings
- Tax benefits implicit in power purchase price
- No cost to County if system non-performance under PPA

Private Project Structure – Sale/Leaseback



Comments on Private Sale-Leaseback Structure

Parties

- County (Landlord, Power Purchaser)
- Developer / Operator (Lessee)
- Tax Investor / Owner (Lessor)
- Construction Contractor

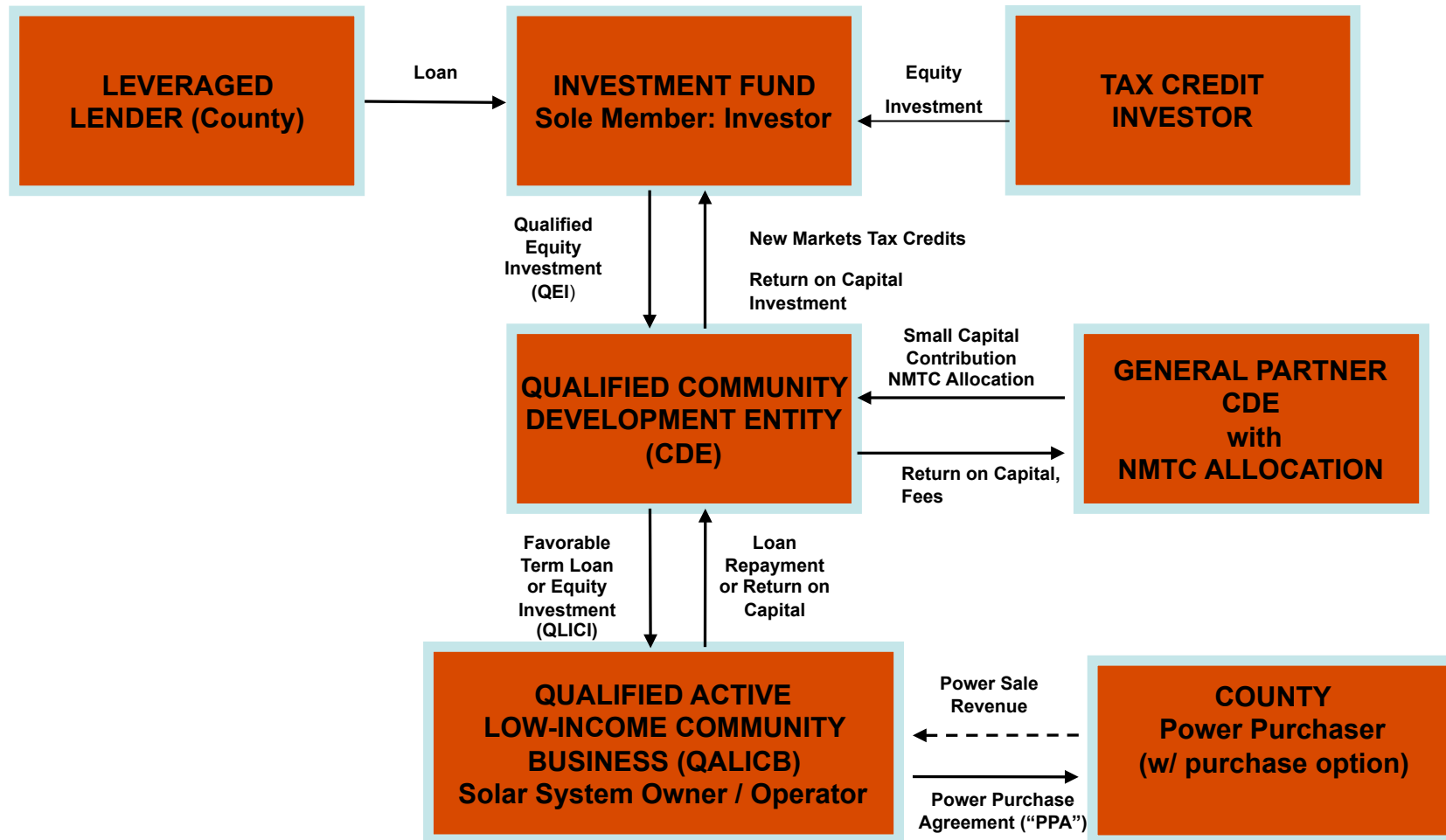
Issues

- Terms of PPA – price, term, purchase option
- Environmental attributes stay with Operator

Potential Upsides

- No up-front capital needed
- Predictable power price
- Utility savings
- Tax benefits implicit in power purchase price
greater tax benefits transferable to tax investor than under partnership flip
- No cost to County if system non-performance under PPA

New Market Financing Structure: No Investment Tax Credit



Comments on New Markets No ITC Option

Parties

- County (Landlord, Power Purchaser, Lender)
- Developer (QALICB)
- Tax Investor
- CDE
- Construction Contractor

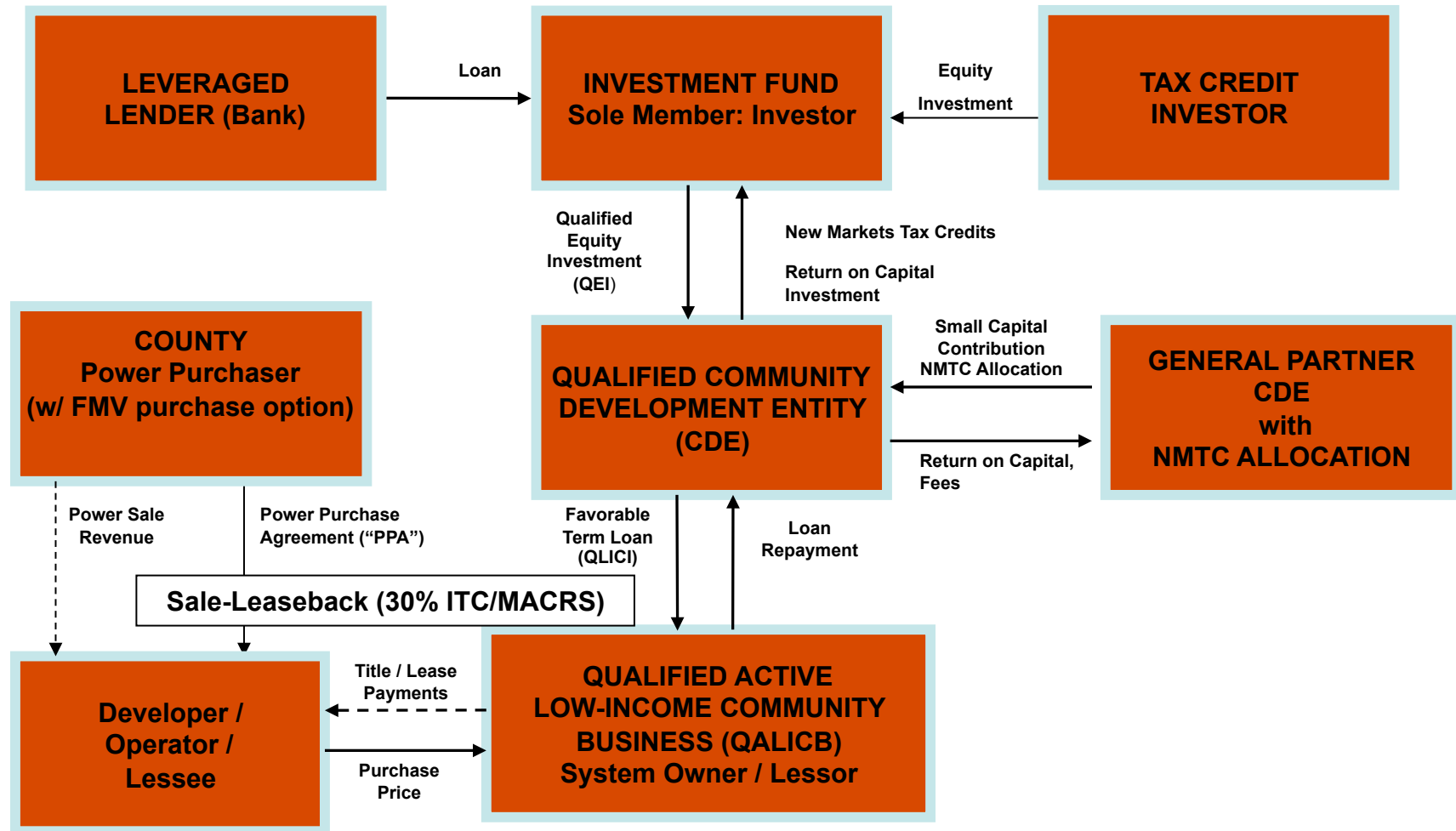
Issues

- County funds to loan
- County Loan Terms (rate, forgiveness)
- Project tied up for 7-years

Potential Upsides

- Discounted ownership of system
- Predictable power price / purchase option
- Utility savings
- Tax benefits implicit in power purchase price (NMTC tax benefits)

New Market Financing Structure: With Investment Tax Credit



Comments on New Markets With ITC Option

Parties

- County (Landlord, Power Purchaser, Lender)
- Developer (QALICB)
- Tax Investor
- CDE
- Construction Contractor

Issues

- Project tied up for 7-years

Potential Upsides

- No upfront capital required from the County
- Predictable power price / purchase option
- Utility savings
- Combined tax benefits implicit in power purchase price (NMTC tax benefits AND ITC and MACRS)

Implementation of Each Financing Option

	CREBs	Tax-exempt	Private w/ ITC	NMTC w/o ITC	NMTC w/ ITC
Time Required	Med-High	Low	Med	High	High
Other Resources	Low	Low	Med	High	High
Limits	IRS Allocations	Volume Limits	Credit Extended	IRS Allocations	IRS Allocations

Finance Analysis - Additional Refinements & Actions

- It may be possible to combine low-cost CREBS financing with a New Markets Tax Credit structure - needs financial and tax analysis. This option, if feasible, would likely compete as a lowest cost financing option.
- Make certain that a third-party owner selling solar power to the County does not fall within the definition of “Public Utility” under Utah law. This is a gray area where legislative or regulatory clarification may be desirable. If this issue cannot be resolved satisfactorily, the low cost options including private ownership could not be implemented.

Conclusions & Recommendations - PV

- The best options involve a PPA
- Lowest-cost options
 - NMTC with ITC
 - Private ownership with ITC
- Simplest structure
 - Tax-exempt debt
- Simplest implementation
 - Private ownership with ITC
 - Tax-exempt debt



Conclusions & Recommendations - PV

- Overall Recommended finance options
 - New Markets Structure with ITC
 - Volume limitations should allow for systems worth \$20 - \$30 million
 - Alternatively, private ownership with ITC and PPA with County
- Implementation suggestions
 - RFP for construction / PPA with form agreement
 - Centralized procurement process regardless of system ownership



Conclusions and Recommendations – Solar Hot Water

- Solar Hot Water for swimming pools has immediate cost savings in first year of operation and short system pay-back
- Applications that use higher temperature water than swimming pools are more capital intensive and would require site-specific cost analysis
- A solar heating program for pools could be implemented with a County procurement on a widespread basis

Recommendations for Action Plan

- Optimize net metering law and seek clarification of “Public Utility” definition to exclude independent renewable energy projects
- Initiate RFP planning process for solar PV and solar thermal projects
 - site selection, team formation, and initial outreach to possible project bidders to gauge interest and barriers
- Continue dialogue with Rocky Mountain Power to mobilize its support
- Prepare and Issue RFPs
- Initiate public stakeholder process to ensure that private projects benefit from the “lessons learned” on the County projects

Specific Policies with Potential to Accelerate Solar Projects

Examples of state policy changes in Utah that could accelerate introduction of solar energy projects may include:

- Property Tax Exemption for Solar Property
- Expand State Corporate Income Tax Credit for Renewables
 - currently allows credit for 10% of project cost, but capped at \$50,000 which compares unfavorably to incentives in other states
- Create revolving fund or loan guarantee program to provide County property owners access to project capital for solar projects

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